RRS SOFTWARE NOTE 15
Operations Division
W/OPS12: HE

SUBJECT:	**Installation of Sippican Signal Processing System (SPS) Software Version (V) 4.8.0**
PURPOSE:	The purpose of this software note is to replace current SPS V4.5.8 software with V4.8.0 software in all Sippican SPS units. V4.8.0 software is required for compatibility with the LMS-6 radiosondes. Version 4.8.0 is also compatible with the Sippican MkIIA radiosonde systems.
SITES AFFECTED:	RRS sites using Sippican SPS and radiosonde systems
AUTHORIZATION:	The authority for this note is Request for Change (RC) 13564, dated 12/05/12, and Sippican ECP SIP-RRS-0129.
VERIFICATION STATEMENT:	This procedure was tested and verified at the Sterling Field Support Center (SFSC) and at six RWS V2.3.1 Operational Test & Evaluation (OT&E) sites.
ESTIMATED COMPLETION DATE:	Perform Sippican SPS software installation as directed by OPS22.
TIME REQUIRED:	Approximately 1.0 hour
ACCOMPLISHED BY:	RRS Site Manager or Systems Administrator
EQUIPMENT AFFECTED:	SPS Assembly (ASN: J700-1A3A7-1A1)
SPARES AFFECTED:	Not applicable (N/A)
PARTS/MATERIALS REQUIRED:	Sippican SPS software application update Version 4.8.0
SOURCE OF PARTS/MATERIALS:	Software Version 4.8.0 is available for download from a CD supplied by OPS, or from the OPS1 Web site: https://www.ops1.nws.noaa.gov/Secure/rrs_softwre.htm
DISPOSITION OF REMOVED PARTS/MATERIALS:	N/A
TOOLS AND TEST EQUIPMENT REQUIRED:	• One laptop with *Windows XP* Operating System • Temporary storage media • 9-pin female to 9-pin female null-modem serial cable (ASN: J700-1A3A7-1W4) • USB-to-serial-port adapter (if needed) • LMS-6 Radiosondes (J037-3) • Radiosonde (test) Power Supply (J700-1SE1PS1)
DOCUMENTS AFFECTED:	NWS EHB 9-715: RRS Sippican MkIIA SPS and Radiosonde Operations and Maintenance Manual
SUMMARY OF CHANGES:	N/A

PROCEDURE:	Attachment A provides procedures for Sippican SPS Software V4.8.0 installation.
TECHNICAL ASSISTANCE:	For questions or problems pertaining to this note, contact the RRS Helpline at (703) 661-1268.
REPORTING INSTRUCTIONS:	Report the completed modification using the Engineering Management Reporting System (EMRS) according to the instructions in *EHB-4, Maintenance Documentation, Part 4, and Appendix H*. Include the following information on the EMRS report: Maintenance Description (block 5): **Sippican SPS Software Application, Version 4.8.0 Update** Equipment Code (block 7): **SPS** Serial Number (block 8): **SPS unit serial number** Maintenance Comments (block 15): **Install Sippican SPS Software Application, Version 4.8.0 I.A.W. RRS Software Note 15.** Mod No. (block 17a): **S15** A sample EMRS report is provided as Attachment **B**.

Deirdre R. Jones
Director, Operations Division

Attachment A – Sippican SPS Software Version 4.8.0 Installation
Attachment B – Sample EMRS Report

ATTACHMENT A - Sippican SPS Software Version 4.8.0 Installation

The Sippican global positioning system (GPS) LMS-6 radiosondes are a substantial upgrade to the Sippican MkIIA Radiosonde. Due to the radiosonde hardware change, SPS Software Version (V) 4.8.0 was developed. The part number (P/N) for this software is Sippican P/N: 9019-108, Rev M. This new SPS software version is also compatible with the current Sippican SPS units (J700-1A3A7-1A1).

SPS Software V4.8.0 is to be used at Radiosonde Replacement System (RRS) sites that use Sippican radiosondes. SPS Software V4.8.0 is compatible with both the new LMS-6 radiosondes (J037-3), and the current Sippican MkIIA radiosonde (J037-1).

SPS Software V4.8.0 has been compiled into a HEX file. Each RRS operational site that uses Sippican radiosondes is responsible for downloading Software V4.8.0 to the SPS assembly in accordance with the following procedures.

A.1 Sippican SPS Software Download/Unzip Procedure

NOTE: A laptop running *Windows XP* is required to install the SPS software. Windows 7 will not install RRS SPS Software V4.8.0.

The SPS assembly's maintenance port must be connected to the laptop by using the null modem cable. The cable must connect the maintenance port on the SPS assembly to the serial port (configured as COM 1) on the laptop. Use a USB-to-serial-port adapter, if necessary. The use of a USB adapter may require additional laptop setup steps to establish the connection between the laptop and the SPS.

SPS Software V4.8.0 is a zip file available from a CD or from the OPS1 Web site. It must be downloaded to the laptop and unzipped. Use the following procedures to perform the download/unzip functions:

1. Download the RRS SPS Software V4.8.0.zip file from a CD or from the following OPS1 Web site address: https://www.ops1.nws.noaa.gov/Secure/rrs_softwre.htm.
2. Save the file to folder **RRS SPS Software v4.8.0** on the laptop (with *Windows XP* operating system).
3. Unzip and save the four unzipped installation files to the **RRS SPS Software v4.8.0** folder.

A.2 Sippican SPS Software Installation and Setup

CAUTION

The RS-232 communication used for uploading new Sippican SPS software may be unreliable when running a laptop on battery power. The laptop should always be on its alternating current (AC) power supply when uploading SPS software.

1. Take the laptop to the radome.

WARNING

Turning on the Uninterruptible Power Supply (UPS) will cause the Telemetry Receiver System (TRS) to begin to move quickly and erratically as a part of its initialization sequence. Stay away from the antenna until the TRS has completed its initialization. When the TRS has completed its initialization, set the radome Control Display Unit (CDU) to MASTER to prevent anyone else from moving the TRS.

2. Turn **ON** the UPS. This will cause the TRS to begin moving as a part of its initialization.
3. Turn **ON** the SPS power and leave it on for 3 minutes. During this time the SPS will delete enough data log files to permit the software to proceed.
4. Turn off the SPS power.
5. With the laptop and SPS power turned off, disconnect the maintenance cable (J700-1A3A7-1W3-A) from the SPS maintenance port.
6. Connect the laptop serial port 1 to the maintenance port of the SPS assembly using the SPS maintenance serial cable (J700-1A3A7-1W4, or Sippican P/N 9019-012).

NOTE: If *Windows XP* is installed on the laptop, it will attempt to load drivers for new hardware identified (e.g., a second mouse). Do not allow new drivers to be loaded. If allowed to load drivers, the SPS software installation process may significantly slow down.

7. Switch the *SPS Download Switch* to the **DOWNLOAD** position (the up position).
8. Turn on the laptop (with *Windows XP* operating system) and allow it to boot up.
9. Locate folder **RRS SPS Software v4.8.0**.
10. To open, double-click **RRS SPS Software v4.8.0** folder.
11. To run, double-click **INSTALL.BAT** (or **INSTALL** if file extensions are hidden). This can be run from *Windows Explorer* or from a command window.
12. Immediately after executing the INSTALL.BAT file, turn on the SPS (**Power** switch on the back of the SPS assembly).

NOTE: INSTALL.BAT may take 2 to 3 minutes to run.

13. The download and installation of the SPS software may take 10 minutes or longer to complete. Progress is reported on the laptop by the following statements (there will be approximately a 1-minute delay with a blank screen before the first message appears):

    - `File download in progress.`
    - `Sending block #____ bytes sent ____ of ____ error count:____.`
    - `File download successful.`
    - `SPS Software Update Complete. Please reset SPS with download switch disabled.`

The error count indicates how many attempts to transfer a data block have failed. When a data block transfer fails, the block transfer is attempted again. There may be several errors and still have a successful download. However after ten errors the download will stop and a failure message will display. If stopped, restart the installation process beginning with Step 11.

NOTE: Watch the progress screen closely as download nears completion. The final two statements will flash by and the screen will close quickly.

If the progress screen closes, assume the SPS software was updated successfully, even if the Observer missed the message that the software update was complete.

14. When `SPS Software Update Complete...` appears, turn off the SPS (**Power** switch on the back of the SPS) and change the SPS download switch to the middle position (the normal operational flight position).
15. Disconnect the SPS maintenance computer serial cable (J700-1A3A7-1W4) from the SPS and reconnect the SPS-RWS maintenance cable (J700-1A3A7-1W3-A).
16. Shut down the laptop.
17. Turn the SPS back on (**Power** switch in the back of the SPS).
18. Power off the UPS.
19. This completes work in the radome. Return to the upper-air office for RWS verification.

A.3 Sippican SPS System Integration Checkout

Use the following procedures to verify the Sippican SPS assembly has been updated to Software V4.8.0.

A.3.1 Verify PTU and Wind Data Availability

Verify Pressure, Temperature, Humidity (PTU) and wind data availability as follows:

1. If not on, start the RWS software application and begin operations for live upper-air sounding, and power up the TRS by turning on the UPS via the RWS *Hardware Status* screen.
2. Click **Run a Live Flight**.

3. Prepare a radiosonde according to the step-by-step radiosonde preparation procedures, but do not connect the radiosonde to a battery. Use the radiosonde power supply (J700-1SE1PS1) from the TRS Maintenance Tool Kit (J700-1SE1) to power the radiosonde for this test in the office (there is no need to take the radiosonde to the radome or to connect the radiosonde to a balloon).
4. Set the TRS frequency to the radiosonde frequency, and engage the automatic frequency control (AFC) function.
5. Using the TRS antenna controller, slew the antenna to maximize the radiosonde signal.
6. Verify that the RWS communicates with the SPS and the TRS antenna, and the SPS is providing PTU and wind data. Wind data will report near 0.0 when the radiosonde is not moving.

NOTE: The first time the SPS is activated, the almanac of GPS satellites can take up to 20 minutes to build. After the verification of the installation of the Software V4.8.0 for the first time, the SPS needs to be left on for 20 minutes to build its almanac.

A.3.2 SPS Operational System Version and Software Verification

After data has been verified as available, terminate the RWS software application, and inspect the sps.log file on the RWS computer to verify the SPS software is the latest version:

1. Use *Windows Explorer* to go to **C:\RWS\RWS\LOGS** and open **sps.log**.
2. Use **CTRL-F** to open the *Find* dialog box.
3. Enter **SPS_SOFTWARE_REV:** and press the **Find Next** button until **SPS_SOFTWARE_REV: "4.8.0"** is found.
4. Confirm the software version is **4.8.0**.
5. Power off the UPS to turn off the TRS ground equipment. (Do not power off the SPS rack unit.)

A.4 Delete SPS Files from Maintenance Laptop

Delete the SPS4.8.0 folder and unzipped files from the laptop desktop. This completes SPS software installation.

A.5 SPS Part Numbers

RRS SPS Assembly	ASN: J700-1A3A7-1A1	Sippican P/N: 9019-040
RRS SPS Software V4.8.0	ASN: N/A (OPS1 Web site)	Sippican P/N: 9019-108, Rev M

This completes Sippican SPS software installation.

ATTACHMENT B - Sample EMRS Report